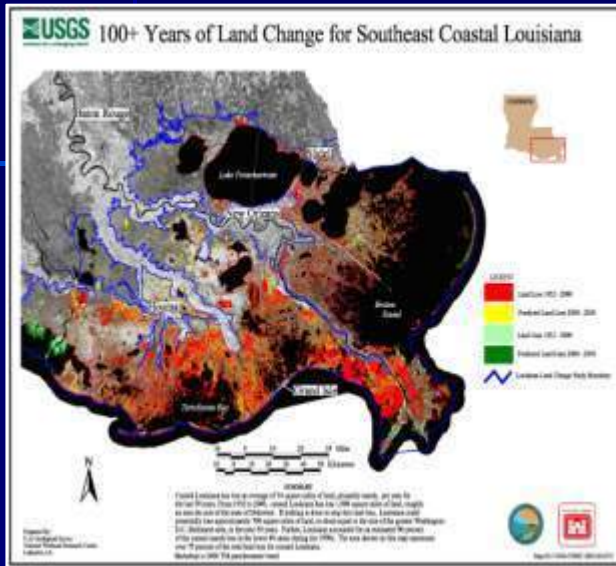


Methodology For Developing and Designing Structural Features

Carl E. Anderson,
Project Manager,
USACE

May 15, 2007

Planning and Design Challenges



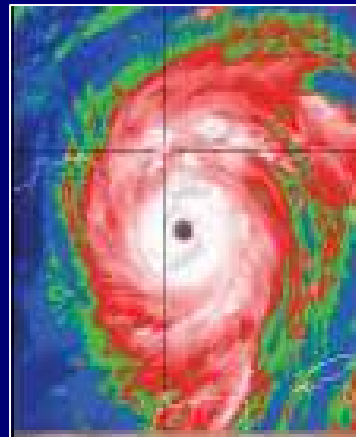
Coastal landscape change



Interconnected levee and wetland systems



Pointe A La Hache River levee
Community recovery
timelines



Battling nature's
most powerful
storms



Difficult
engineering
conditions

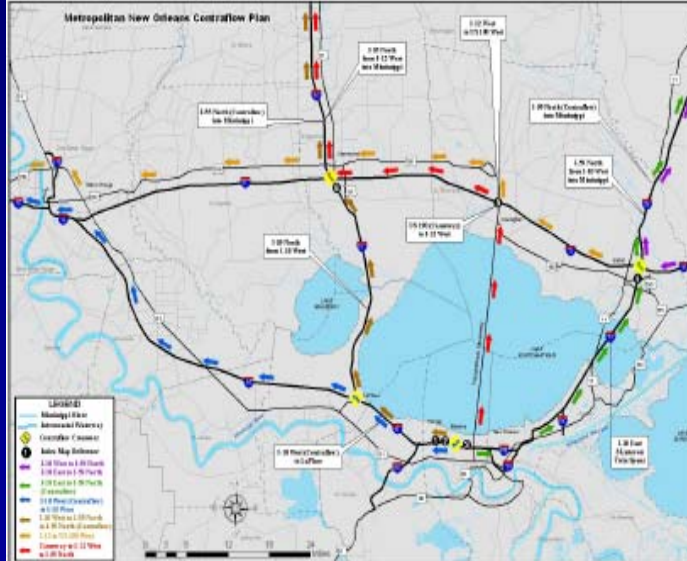


Innovative technologies

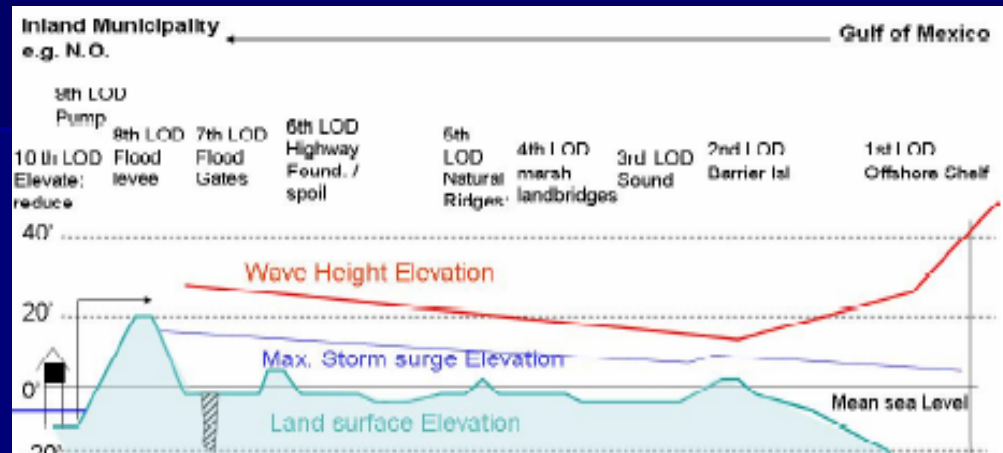
Flood and Storm Damage Risk Reduction Strategies



Community recovery and redevelopment plans



Evacuation plans



Multiple lines of defense



Structural storm surge barriers

Types of Risk Reduction Measures

- Structural
 - Barriers
 - Flood Gates
 - Levees
 - Water control structures
- Coastal Restoration
 - Barrier islands
 - Marshes
 - Swamps
- Non-Structural
 - Raised buildings
 - Stronger buildings
 - Relocated buildings
 - Building codes / flood plain management
 - Evacuation planning /execution



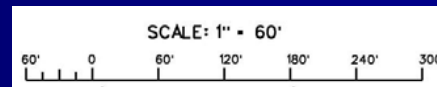
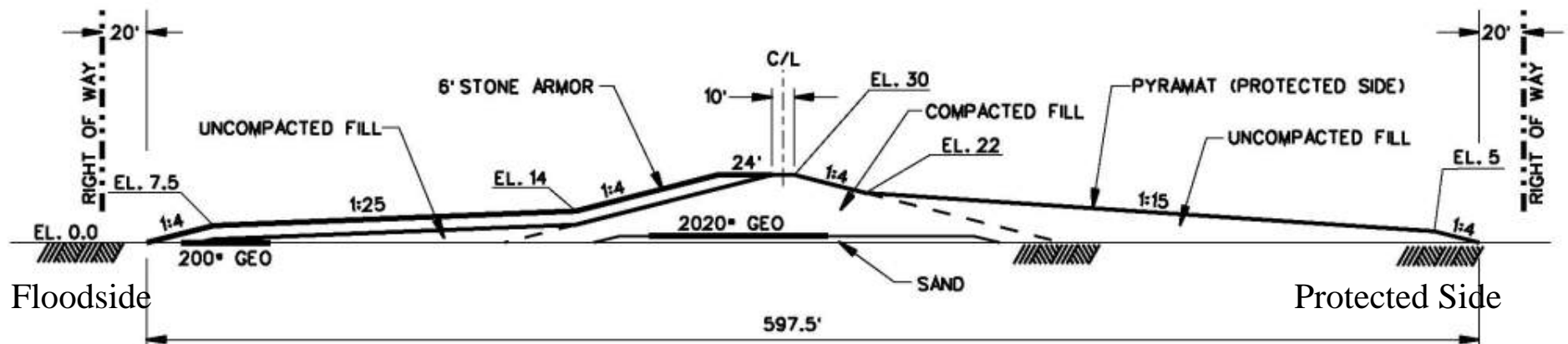
Source: Lake Ponchartrain Basin Foundation

Traditional Designs

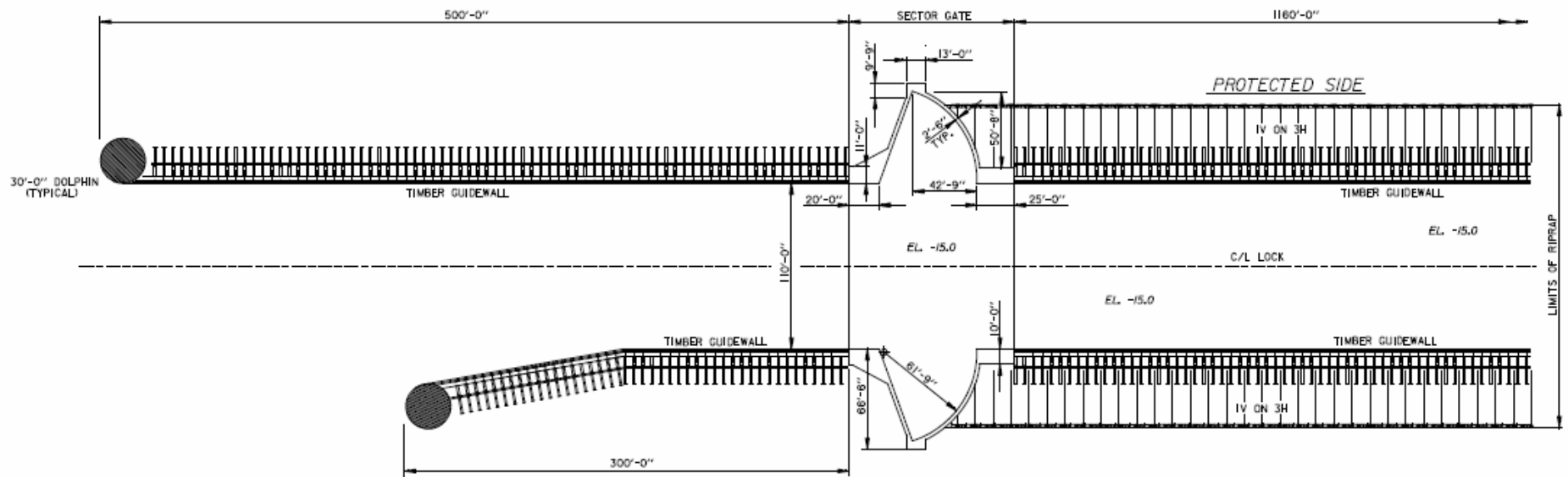


US Army Corps
of Engineers®
New Orleans District

Earthen Levee with High Strength Fabric



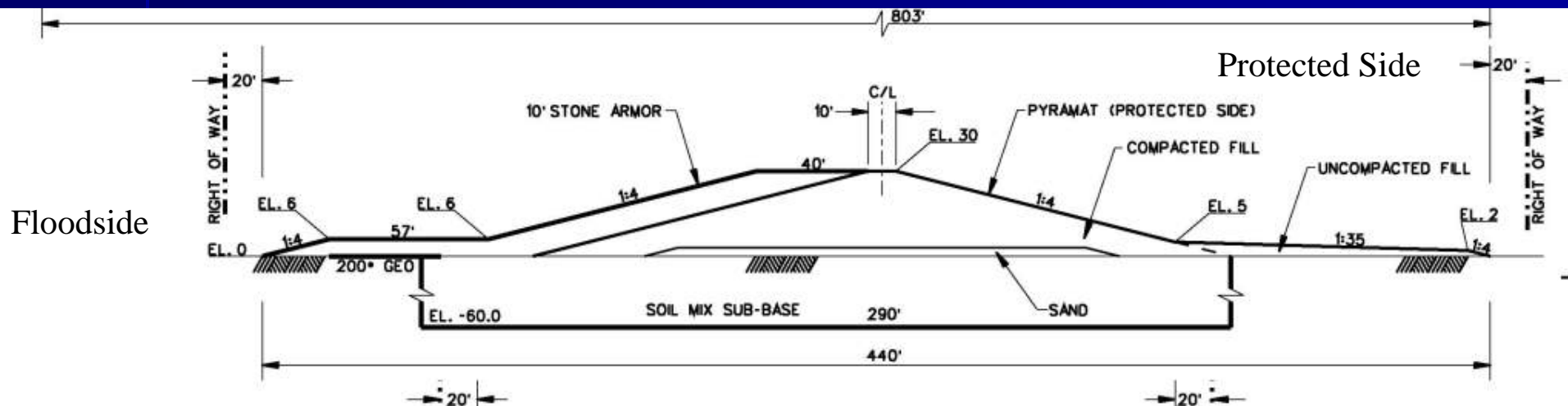
Sector Gate



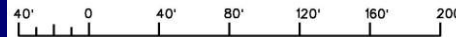
Innovative Designs



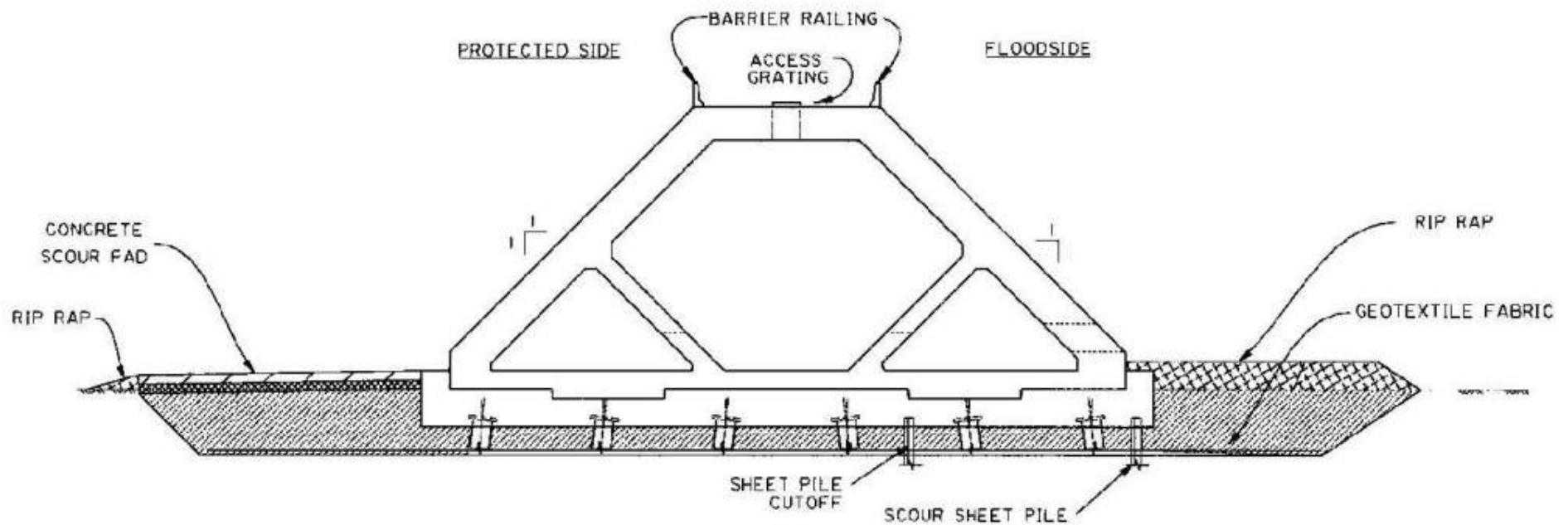
Earthen Levee with Soil Columns



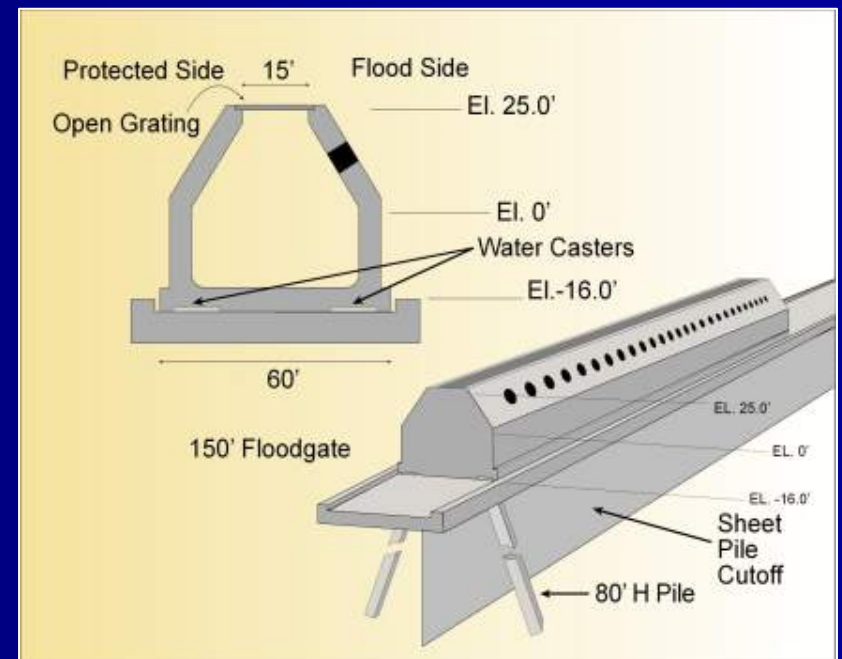
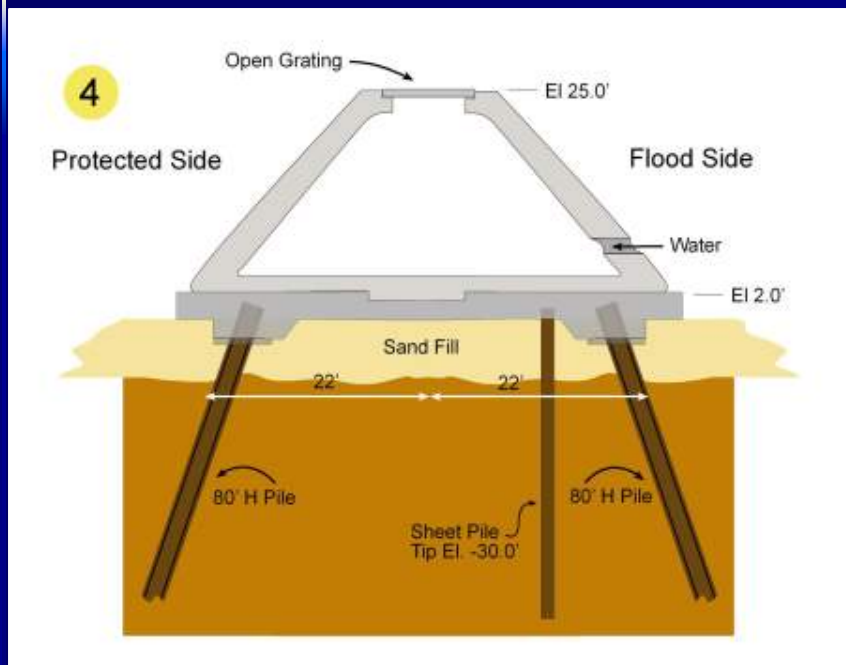
SCALE: 1" = 40'

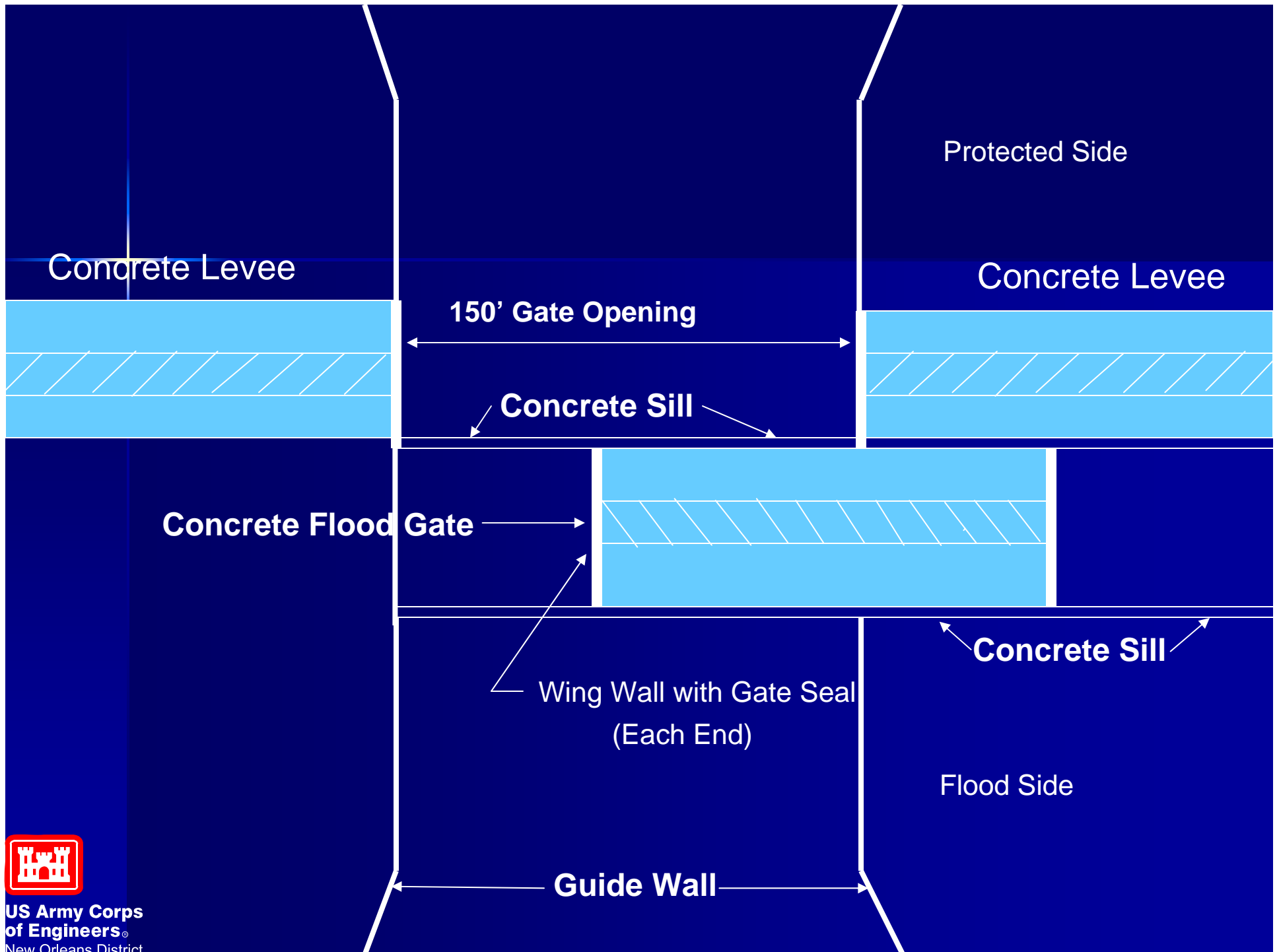


HOLLOW CORE CONCRETE LEVEE

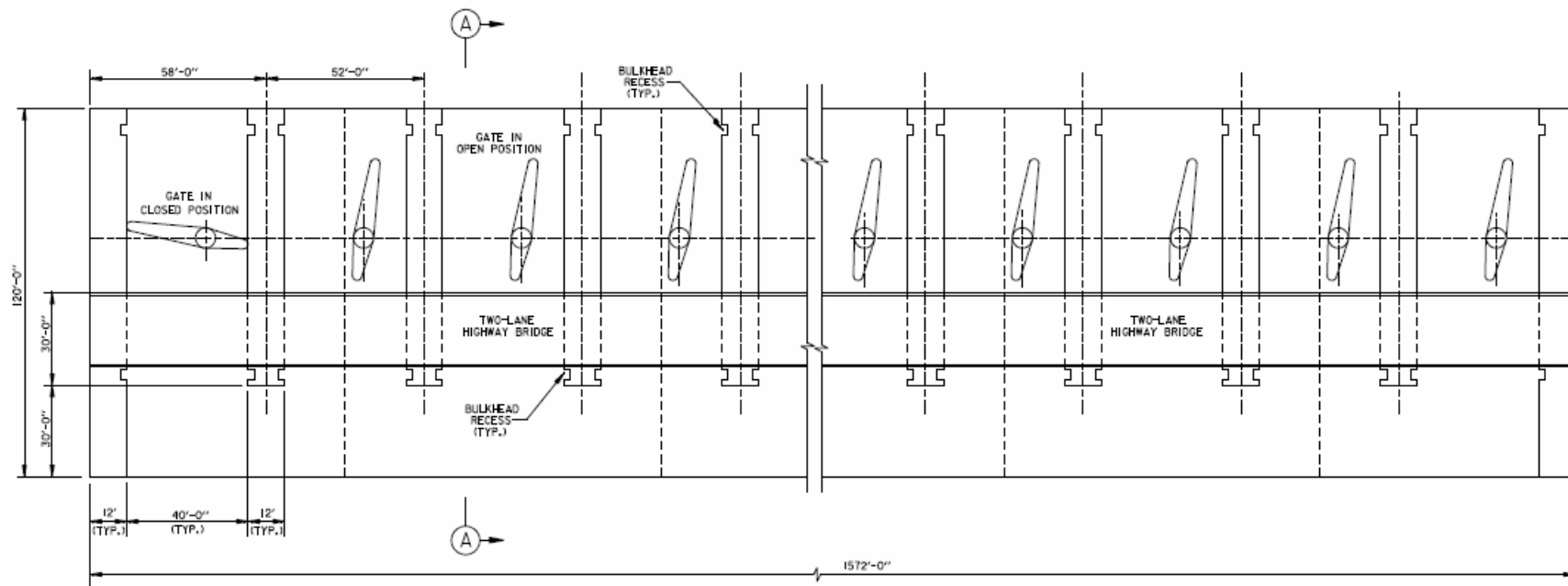


Hollow core Levees



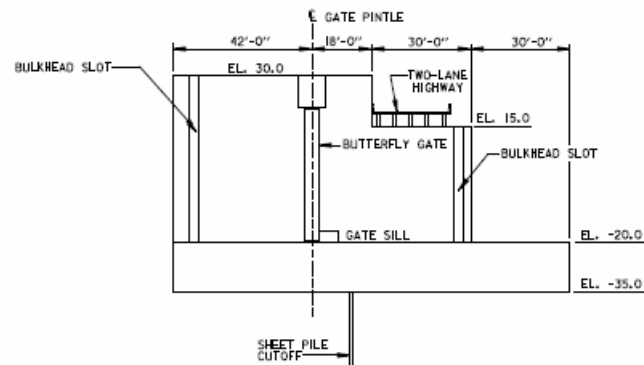


Butterfly Gate



PLAN BELOW EL. 20.0
BUTTERFLY GATED STRUCTURE

SCALE: 1" = 20'



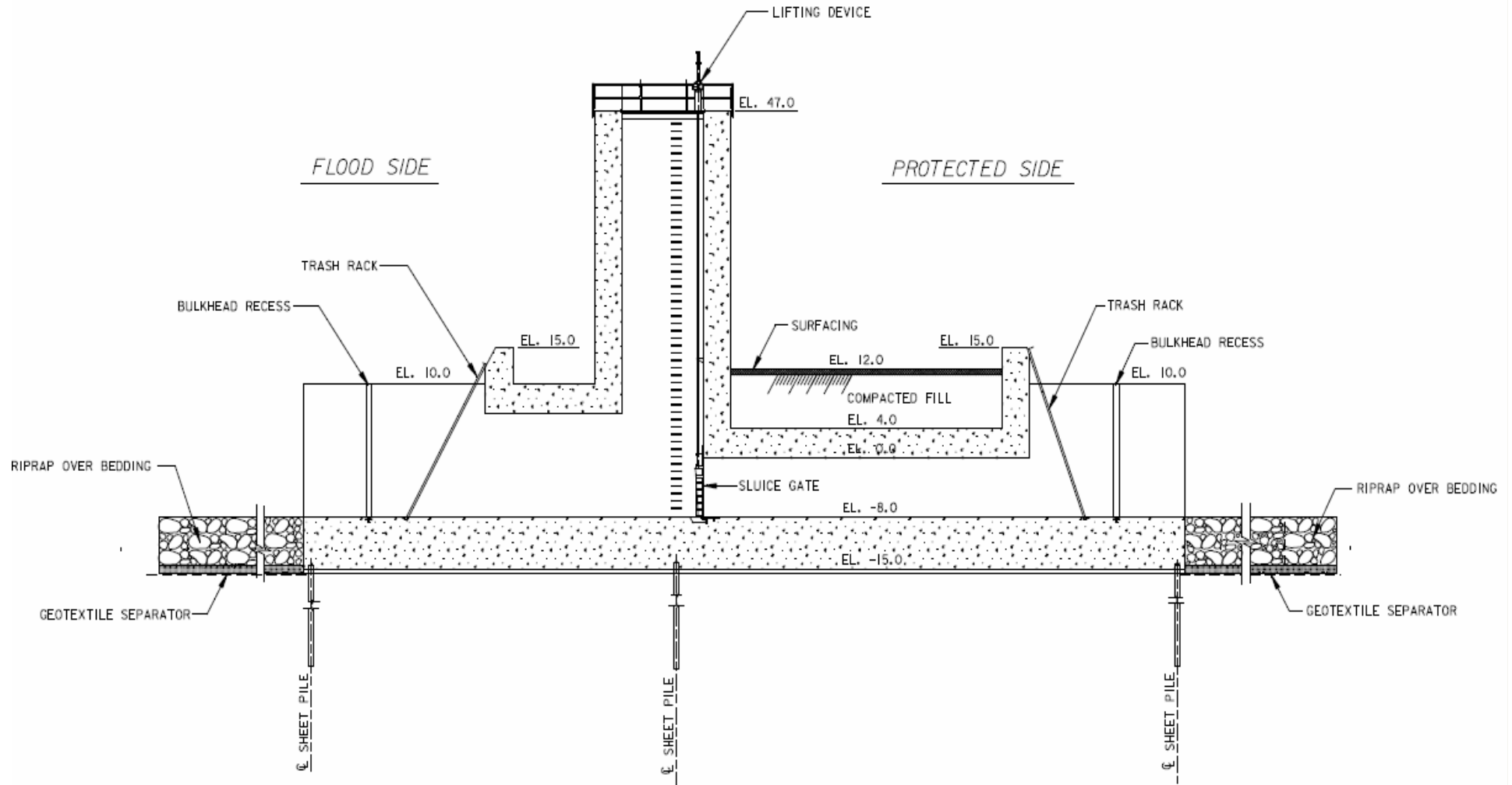
SECTION A-A

SCALE: 1" = 20'



Hydrologic Structures

Typical Culvert Cross Section



Comparison of Designs

- **Lift Cycle Cost**
- **Footprint**
- **Constructability**
- **Impacts to the Environment**
- **Reliability**
- **Maintainability**
- **Availability of Construction Material**
- **Speed of Protection**

Hurricane Katrina
1445 UTC 29 August 2005
GOES-12 visible channel
over a MODIS true-color background

Louisiana Coastal Protection and Restoration (LACPR)

Carl Anderson
Project Manager

<http://lacpr.usace.army.mil/>



**US Army Corps
of Engineers**